IN THIS ISSUE:

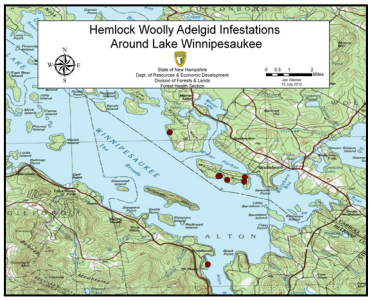
FIELD SURVEYS: HWA, EAB, ALB	**Page 1**
AERIAL SURVEY HIGHLIGHTS	**Page 5**
FEATURE ARTICLE: White Pine Blister Rust Revisited	**Page 7**
FEATURE CREATURE: Red Pine Scale	**Page 9**
OFFICE NOTES	**Page 12**

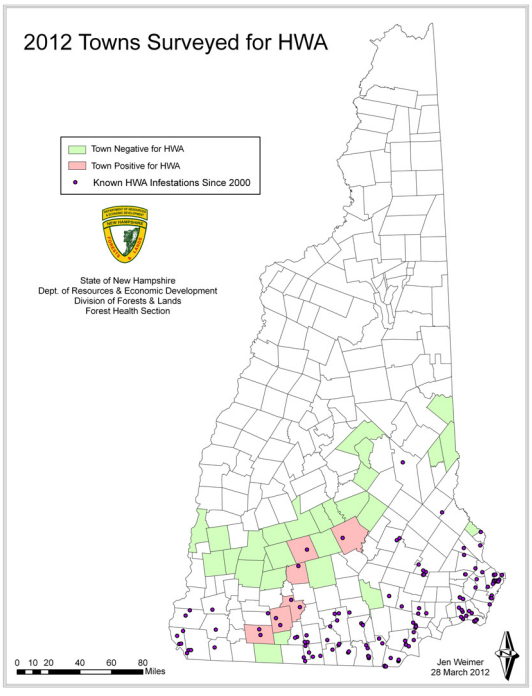
Click on the HYPERLINKS throughout for more information on topics

FIELD SURVEYS

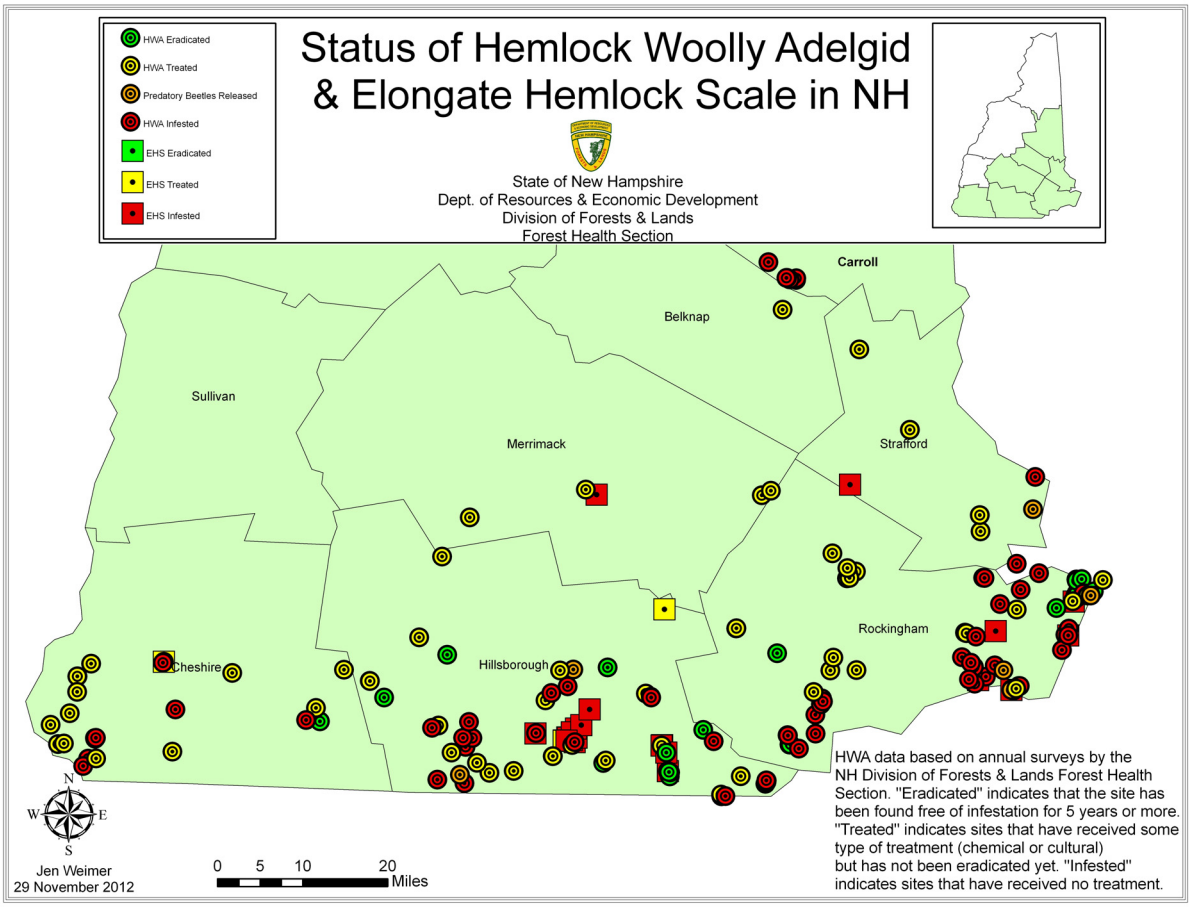
Hemlock Woolly Adelgid

Hemlock Woolly Adelgid (HWA) continues to spread throughout NH. Town surveys for HWA were done again this year in cooperation with Vermont and Maine as part of a regional HWA initative. A total of 33 towns were surveyed in 2012 with a minimum of 200 branches per site at 5 high risk sites per town. New infestations of HWA were found in 6 of those towns. These include the towns of Jaffrey, Greenfield, Peterborough, Henniker, Concord, and Deering. Infestations in Durham, Kensington, New Durham, Marlborough, Wolfeboro, and Tuftonboro were also reported by landowners over the summer.

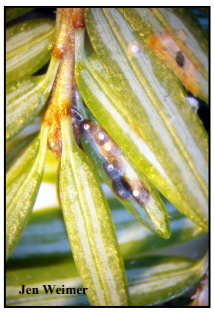



2012 Towns Surveyed for HWA
Town Negative for HWA
Town Positive for HWA
Known HWA Infestations Since 2000
State of New Hampshire
Dept. of Resources & Economic Development
Division of Forests & Lands
Forest Health Section
0 10 20 40 60 80
Miles
Jen Weimer
28 March 2012

Post suppression surveys were also conducted at all sites treated in 2006 & 2007 to determine if the infestations had been eradicated. In addition a few sites treated in 2000 and 2011 were surveyed. Only a few sites can be considered eradicated and many of the sites have become reinfested. During the spring and fall we treated 10 infested properties with basal bark applications of Dinotefuran.


HWA Eradicated
HWA Treated
Predatory Beetles Released
HWA Infested
EHS Eradicated
EHS Treated
EHS Infested
Status of Hemlock Woolly Adelgid & Elongate Hemlock Scale in NH
State of New Hampshire
Dept. of Resources & Economic Development
Division of Forests & Lands
Forest Health Section
Carroll
Belknap
Sullivan
Merrimack
Strafford
Rockingham
Cheshire
Hillsborough
N
W
E
S
Jen Weimer
29 November 2012
0 5 10 20
Miles
HWA data based on annual surveys by the NH Division of Forests & Lands Forest Health Section. "Eradicated" indicates that the site has been found free of infestation for 5 years or more. "Treated" indicates sites that have received some type of treatment (chemical or cultural) but has not been eradicated yet. "Infested" indicates sites that have received no treatment.

Elongate Hemlock Scale (EHS) was also found at several new sites in Nashua, North Hampton and Portsmouth during the HWA post suppression surveys and reported by landowners in Milford, Concord and Strafford.

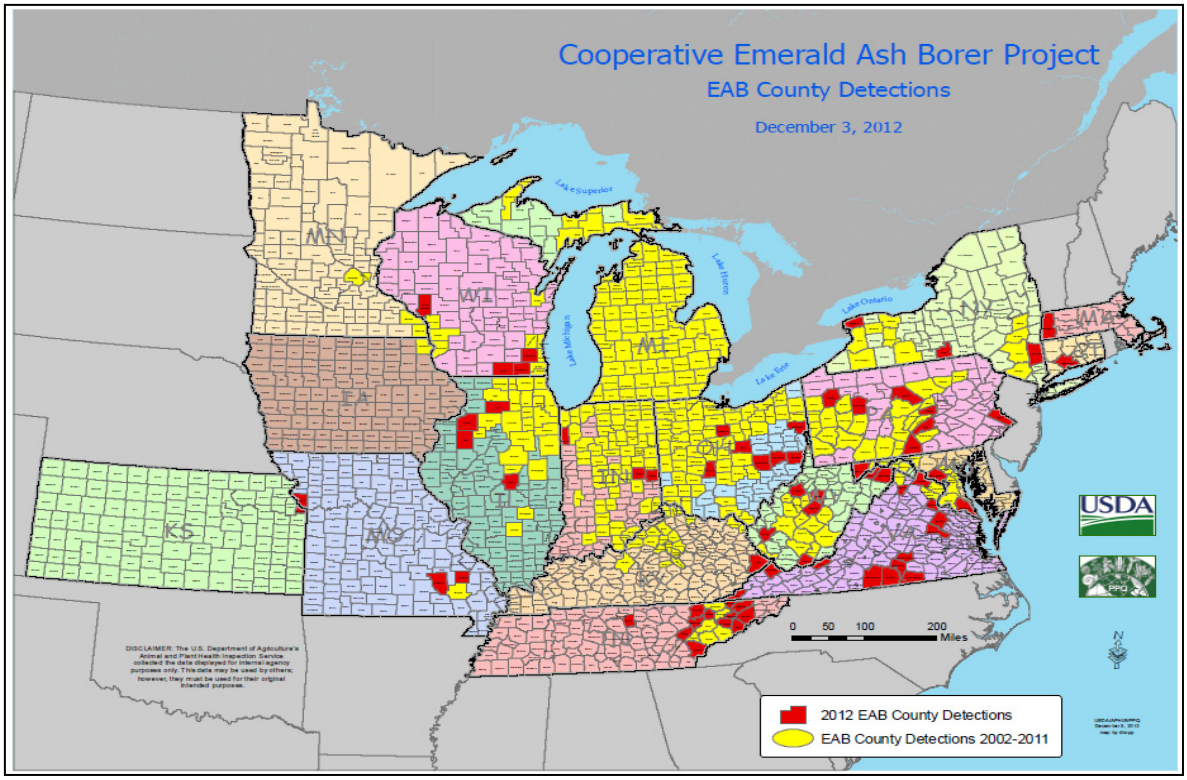


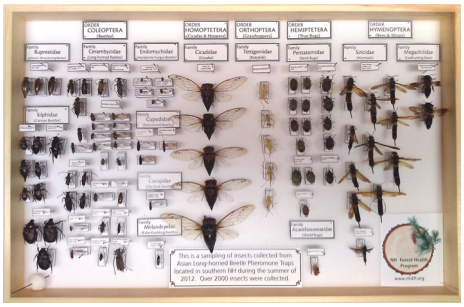
The Exotic Circular Hemlock Scale

Hemlock trees in NH are also now threatened by a new exotic—Circular Hemlock Scale (*Nuculaspis tsugae*)—which was confirmed this year in Hampton Falls at a site also infested with HWA. This new scale pest from Japan completes two generations per year resulting in large populations and can be easily confused with the native circular scale on hemlock *(Abgrallaspis ithacae)*. The exotic circular hemlock scale is yellow-brown in color with a yellow center while the native hemlock scale is gray-brown with a black center.

Emerald Ash Borer (EAB)

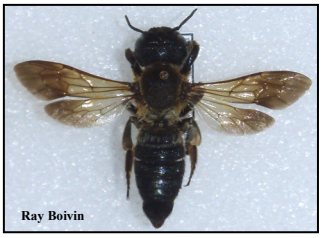
EAB continues to spread east and was detected in Connecticut and Massachusetts this summer. Our surveys this year included bio-monitoring and trap trees. Purple traps were also deployed around the state by APHIS. Just over 400 native buprestids were collected from *Cerceris fumipennis* colonies. Roughly 30 trap trees were girdled by volunteers around the state and peeled. No signs of EAB were found in these surveys.





Asian Longhorned Beetle

ALB continues to be detected in Massachusetts and Ohio but has not been found in NH. We continued the pool filter survey this year to include 19 private campgrounds. Collections were made weekly for six weeks during the ALB flight season. Traps were also hung in high risk areas in Cheshire and Hillsborough Counties during the ALB flight season. Over 2000 insects including wood boring insects were collected in the traps. In addition a non-forest exotic— Giant Resin Bee —was collected for the first time in NH. This solitary exotic bee nests in wooden structures excavated by carpenter bees or other insects and is harmless to humans but may compete with native bees. In addition, several second homes in Carroll County owned by Worcester area residents were surveyed. No signs of ALB were found in these surveys.



Giant Resin Bee

Asian Longhorned Beetle 2012 Surveillance

- Second Home Surveys
- Pool Filter Survey
- Traps

State of New Hampshire
Dept. of Resources & Economic Development
Division of Forests & Lands
Forest Health Section

Funded by the U.S. Forest Service
Northeastern Area
State and Private Forestry

N
W E
S

Jen Weimer
15 August 2012

0 5 10 20
Miles

Pheromone Trapping of Forest Pests

Each summer pheromone bucket traps are placed around the state to monitor common forest pest populations. Epidemics can be predicted by analyzing trends over time. In 2012 pheromone traps were placed around the state for Spruce Budworm, Forest Tent Caterpillar, and Oak Leaftier. Spruce Budworm and Forest Tent Caterpillar remain at endemic levels. Although little defoliation was detected this year Oak Leaftier catch was up at some sites and heavy defoliation in isolated areas of Grafton County may be seen next year.

NH Aerial Survey Highlights for 2012

NH's annual aerial survey is a cooperative effort between the NH Division of Forests and Lands and the USDA Forest Service Northeastern Area State and Private Forestry. The 2012 NH state aerial survey team mapped 6,471 acres of serious damage or defoliation on state and private lands and the USDA Forest Service mapped an additional 20,353 acres of damage on the White Mountain National Forest.

Browning of white pine throughout the state early in the summer caused by several **needlecast diseases** was the primary damaging causing agent mapped this year with 12,101 acres mapped by the Forest Service. Additional browning on pine was observed through out the state but not visible during our surveys. **Septoria leaf spot** on birch was evident late summer and mapped on 2237 acres. Defoliation from unknown damage causing agents was mapped on 1876 acres. Dieback from **logging damage** was mapped on 1203 acres and **Balsam Woolly Adelgid** mortality was mapped on 1132 acres. In addition there was minor **wind** (23 acres) and **hail** damage (6476 acres) mapped.

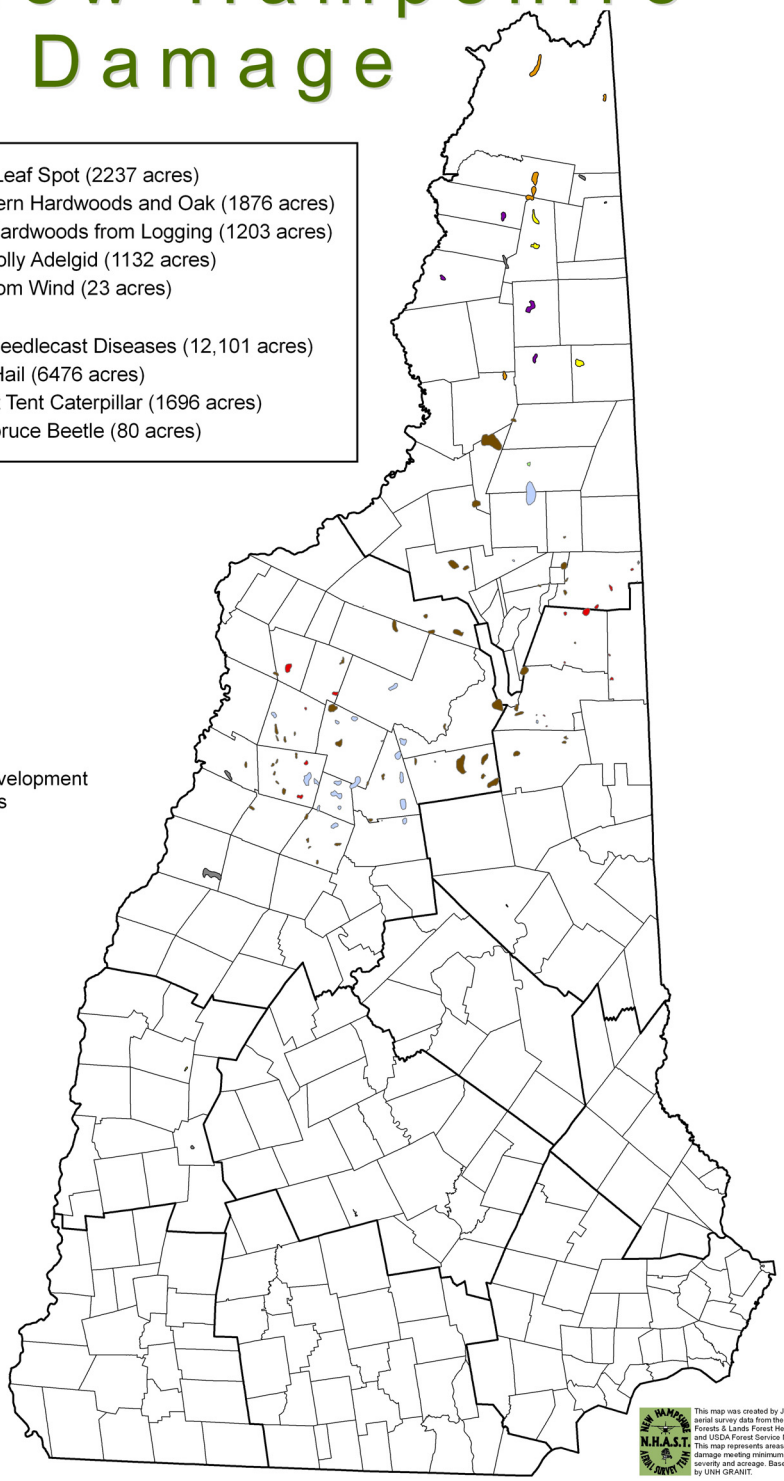
Map of 2012 major forest damage on the following page

2012 New Hampshire Forest Damage

- Discolor of Birch by Septoria Leaf Spot (2237 acres)
- Unknown Defoliation of Northern Hardwoods and Oak (1876 acres)
- Dieback of Fir and Northern Hardwoods from Logging (1203 acres)
- Mortality of Fir by Balsam Woolly Adelgid (1132 acres)
- Mortality of Pine and Maple from Wind (23 acres)

WMNF

- Defoliation of White Pine by Needlecast Diseases (12,101 acres)
- Defoliation of Hardwoods by Hail (6476 acres)
- Defoliation of Maple by Forest Tent Caterpillar (1696 acres)
- Mortality of Scotch Pine by Spruce Beetle (80 acres)



State of New Hampshire
Dept. of Resources & Economic Development
Division of Forests & Lands
Forest Protection Bureau
Forest Health Section
PO Box 1856
Concord, NH 03302
603-464-3016

N
W E
S

U.S. Forest Service
Northeastern Area
State and Private Forestry

0 5 10 20
Miles

This map was created by Jen Weimer using aerial survey data from the NH Division of Forests & Lands Forest Health Program and USDA Forest Service Northeastern Area. This map represents areas of forest damage meeting minimum thresholds of severity and acreage. Base data provided by UNH GRANIT.

30 October 2012

FEATURE ARTICLE

By: Kyle Lombard

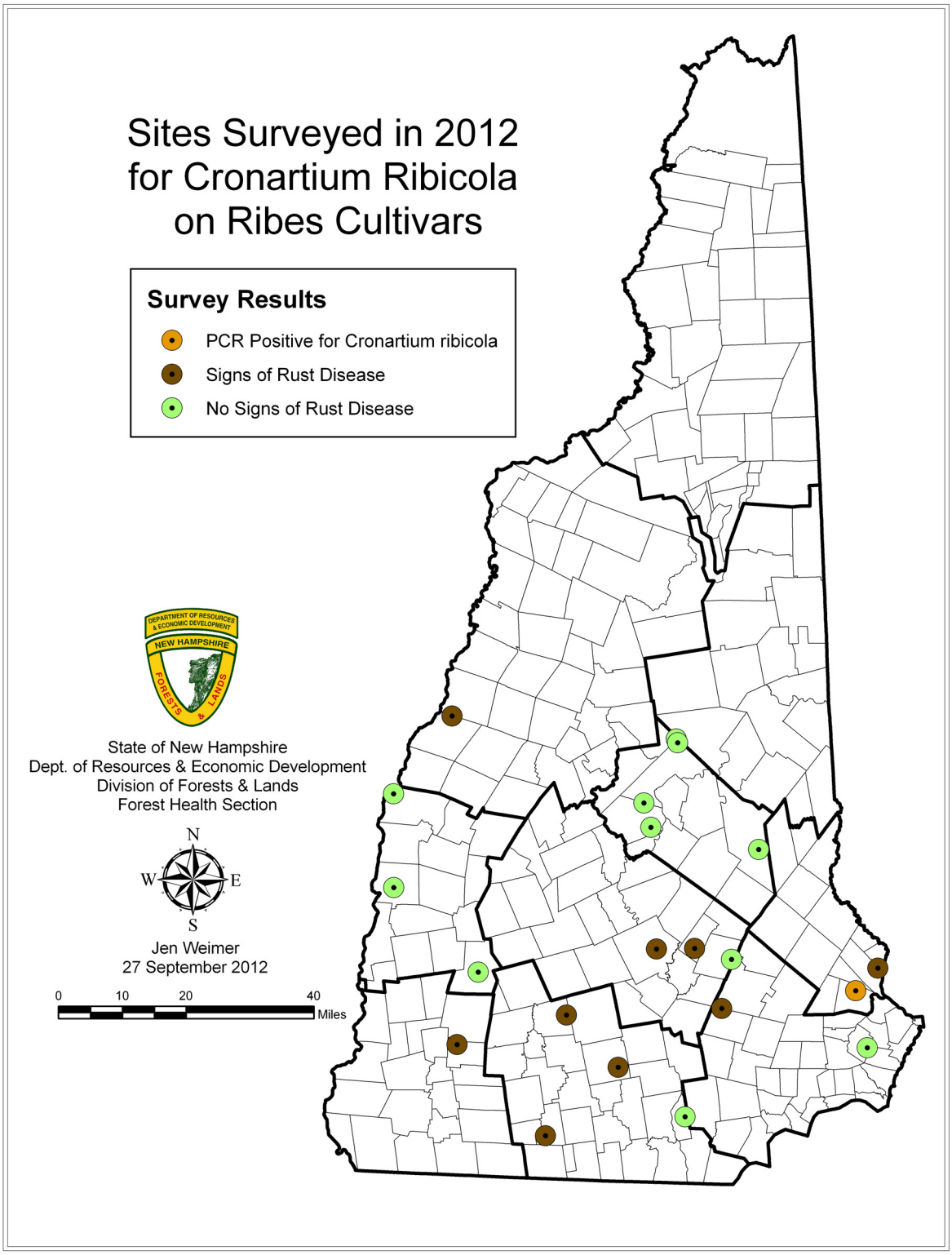
White Pine Blister Rust Back In the Cross Hairs

Our old nemesis white pine blister rust seems to have reared its ugly head again and requires our attention. You'll remember from 1917 to 1986 thousands of foresters and laborers spent millions of hours destroying black currants, skunk currants, smooth gooseberry, and many more species of gooseberries and currant plants throughout New Hampshire. This monumental effort was designed to break the disease cycle of white pine blister rust, a pathogen accidentally introduced to North America in white pine seedlings imported from Europe. By the mid 1990's the occurrence of blister rust damage in our pine forest was relatively rare and much research had gone into developing immune *Ribes* cultivars that wouldn't develop blister rust fruiting bodies. By 2000 a short list of 19 gooseberries and currants were available to legally plant in NH if you provided the State with information on what species and cultivar you purchased off the list and where it was being planted. For a decade we accepted these permits and shifted our attention to other forest pests like hemlock woolly adelgid and emerald ash borer. However, in 2011 scientists in Connecticut documented the occurrence of infected *Ribes nigrum* cv. *Titania*, one of the immune cultivars. And subsequent research proved a breakdown of immunity in this cultivar. "Titania" was on New Hampshire's list of approved species to plant so this gave us pause to think we should visit a sampling of sites in August of 2012 to survey for signs of blister rust on previously approved varieties of gooseberries and currants. The Division visited 23 sites in approximately 16 towns and found 9 of these locations had visual signs of blister rust infection. All of the *Titania* was found with blister rust symptoms and 12 of the other 18 varieties on the approved list were also noted to have infections. A small sub sample of these infected plants was sent for DNA confirmation and most came back positive from the lab.

Signs of Rust Disease on Cultivated *Ribes*

Symptoms of Blister Rust on Pine Growing Next to Cultivated *Ribes*

OK, now what? In October a moratorium was put on any further plantings of gooseberries or currants in New Hampshire until further study in 2013. The plan, assuming funding is approved for the project, is to sample a much larger portion of the plantings and have a much more detailed analysis of the disease signs completed by regional pathologists. We'll also document the infection levels of blister rust damage on white pine at or near the planting sites. When this larger survey is complete we'll work with partners like the Department of Agriculture, Markets &Food, UNH Cooperative Extension, Consulting Foresters, Plant growers, and the U.S Forest Service to modify New Hampshire's quarantine and permit process.


Sites Surveyed in 2012
for Cronartium Ribicola
on Ribes Cultivars
Survey Results
PCR Positive for Cronartium ribicola
Signs of Rust Disease
No Signs of Rust Disease
DEPARTMENT OF RESOURCES & ECONOMIC DEVELOPMENT
NEW HAMPSHIRE
FORESTS & LANDS
State of New Hampshire
Dept. of Resources & Economic Development
Division of Forests & Lands
Forest Health Section
N
W
E
S
Jen Weimer
27 September 2012
0
10
20
40
Miles

FEATURE CREATURE

By: Jen Weimer

Red Pine Scale *(Matsucoccus resinosae)*

Late summer observations by state lands foresters resulted in the awareness of a new exotic pest problem in NH—the Red Pine Scale. This exotic scale was most likely introduced to the US on exotic pines planted at the NY World's Fair in 1939. First reported in Connecticut in 1946 it is now rapidly killing red pines throughout southern New England, New Hampshire (Merrimack County), New York, New Jersey and eastern Pennsylvania. In NH it was first detected at Bear Brook State Park in a well managed red pine plantation. Delineation surveys identified infestations in Allenstown, Epsom, Loudon, Concord, and Chichester. A second exotic on red pine—Red Pine Adelgid *(Pineus boerneri*) was also observed throughout Cheshire, Hillsborough, Rockingham, and Merrimack Counties during the surveys. This pest has not been known to cause mortality and infested trees in NH appear healthy. In addition the native Red Pine Adelgid *(Pineus coloradensis*) was observed on the needles in some stands.

Red Pine infested with Red Pine Scale at Bear Brook State Park

Foliage of scale infested trees changes slowly from light green to yellow to red appearing first on individual branches in the lower part of the crown then gradually over the entire crown. Masses of cottony white filaments become visible on the branches when infestations are heavy. Weakened trees may also be attacked by bark beetles causing rapid tree mortality.

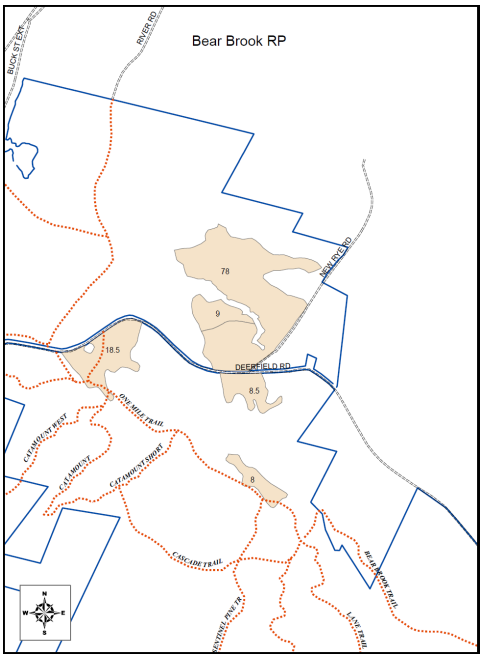
The red pine scale has two generations per year. Adult females are brownish red and wingless. Pre-adult males resemble females but are smaller and soon after emergence become true winged adults inside a waxy cocoon. Although adult males are winged they do not fly. The summer generation lay their eggs in early spring and these mature in early August to lay the fall generation. First stage larvae resemble adult females but are smaller and transform into an intermediate legless stage. The fall generation overwinters as first stage crawlers under bark scales and become adults the following spring.

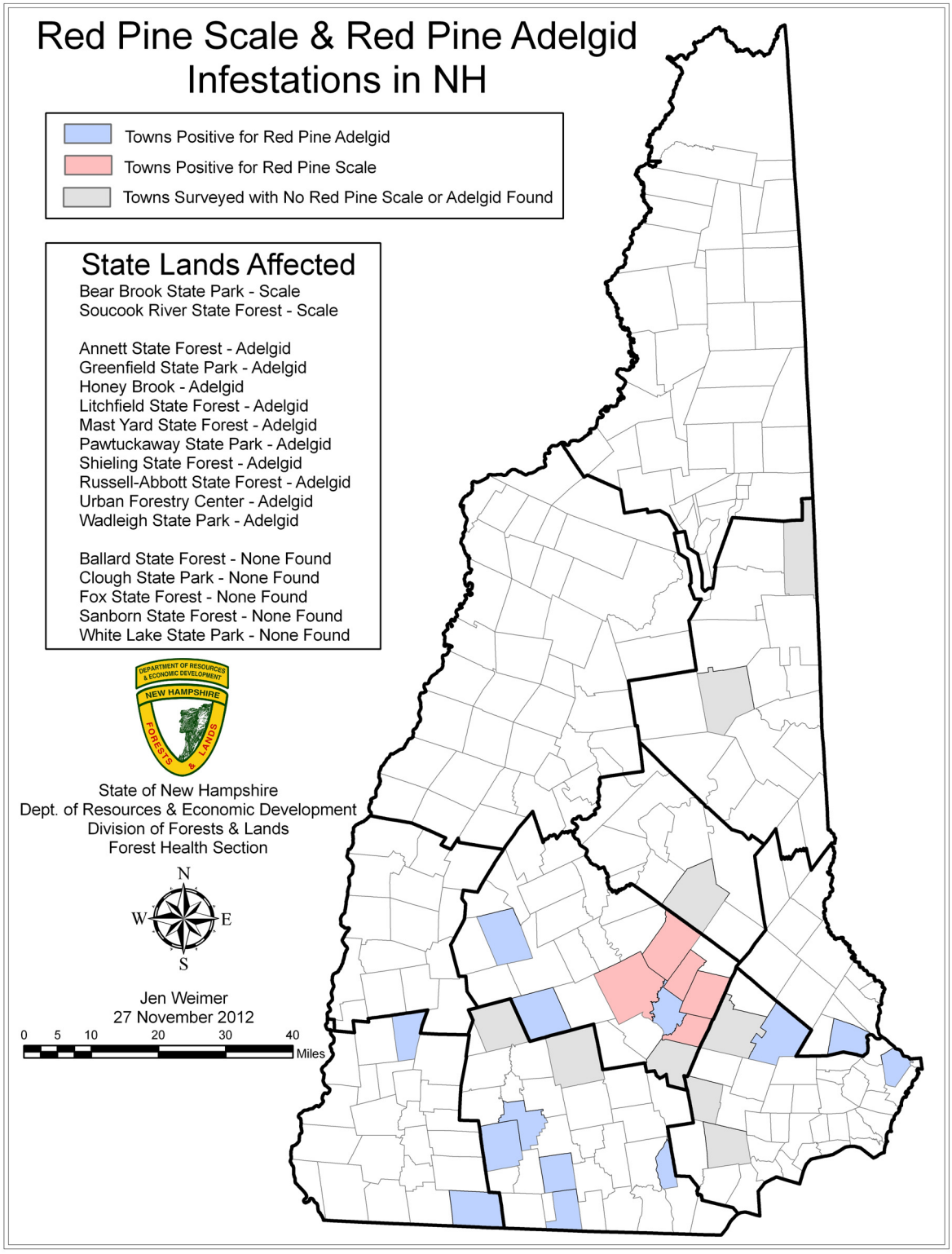
Red Pine Scale Nymphs

Several species of native predators attack red pine scale but are not abundant enough for effective control. Trials in Connecticut of introduced predators have also been ineffective. There are currently no known effective chemical controls for plantations. Maintaining tree vigor may aid in slowing tree mortality and attack by bark beetles but avoid fertilizing as this only favors the scale. Harvesting during winter months will aid to prevent spread of the scale.

A sanitation harvest is currently being planned at Bear Brook State Park to reduce the population, salvage timber, and reduce a potential fire hazard that will be left by 118 acres of dead trees. Recent Press Release:

> Sanitation Timber Harvest at Bear Brook State Park: The New Hampshire Division of Forests and Lands will be harvesting several red pine plantations on 118 acres of Bear Brook State Park. This will be a sanitation harvest to remove trees that are infested with red pine scale, an exotic insect that has caused swift decline and mortality in red pine stands throughout RI, CT and MA. This is the first documented case in New Hampshire and the Division of Forests and Lands is acting swiftly in an attempt to minimize the spread of this devastating insect. Red Pine Scale outbreaks were first detected in CT, NY and NJ between the 1940's and 1960's and it has slowly crept north virtually eliminating red pine in RI and CT. Over the past few years it has spread across most of MA. The insect itself is not very mobile but it is easily spread by the wind and birds. The first visible signs of infestation include bright "flagging" or discoloration of the lower branches followed by swift decline of the entire crown and rapid stand wide mortality. "The Division of Forests and Lands does not, as a matter of practice, regenerate individual units of such a large scale as is planned with this operation," stated Ken Desmarais, Forest Management Administrator. "However based on experience in southern New England and the best current science, we expect most of the red pine trees within these stands to be killed within the next few years. Our goal is to substantially slow the spread of the red pine scale insects into other locations by harvesting these trees. A dead forest would offer very little recreation opportunity and would be unsafe for visitors. The newly regenerated stands will provide wildlife habitat and safe recreation conditions." Harvesting is expected to begin this winter and will be concentrated in red pine stands along Deerfield Road, New Rye Road and One Mile Trail. For additional information regarding red pine scale or if you have a red pine stand that you suspect may be infected contact Forest Health Program Coordinator Kyle Lombard at (603) 464-3016. For additional information regarding the sanitation harvest at Bear Brook contact Regional Forester Will Guinn at (603) 271-2214.




Red Pine Scale & Red Pine Adelgid Infestations in NH
Towns Positive for Red Pine Adelgid
Towns Positive for Red Pine Scale
Towns Surveyed with No Red Pine Scale or Adelgid Found
State Lands Affected
Bear Brook State Park - Scale
Soucook River State Forest - Scale
Annett State Forest - Adelgid
Greenfield State Park - Adelgid
Honey Brook - Adelgid
Litchfield State Forest - Adelgid
Mast Yard State Forest - Adelgid
Pawtuckaway State Park - Adelgid
Shieling State Forest - Adelgid
Russell-Abbott State Forest - Adelgid
Urban Forestry Center - Adelgid
Wadleigh State Park - Adelgid
Ballard State Forest - None Found
Clough State Park - None Found
Fox State Forest - None Found
Sanborn State Forest - None Found
White Lake State Park - None Found
DEPARTMENT OF RESOURCES & ECONOMIC DEVELOPMENT
NEW HAMPSHIRE
FORESTS & LANDS
State of New Hampshire
Dept. of Resources & Economic Development
Division of Forests & Lands
Forest Health Section
N
W
E
S
Jen Weimer
27 November 2012
0 5 10 20 30 40
Miles

Office Notes

An American chestnut seed orchard is being established outside our office at the Caroline A. Fox Research and Demonstration Forest in Hillsboro as part of the American Chestnut Foundation's breeding program. Planting plots of seed from northeastern breeding orchards will begin in 2016 and continue until 2021. Starting in 2022 seedlings will be inoculated with chestnut blight and non resistant trees will be culled from the orchard. When this process is complete, trees from different breeding orchards will be allowed to naturally pollinate to produce the seed which will eventually be out-planted into the woods of New Hampshire.

The forest health office consists of two full time staff and several part time seasonal staff. Ray Boivin, our part time Entomologist, worked with us again this summer on the pool filter survey, ALB trapping, and EAB trap trees. Ray sorted through thousands of insects and updated our displays and collections. He also sorted through insect photos submitted by the public through the UNH Cooperative Extension website. Sarah Frischknecht also returned this year to help with the pool filter and Cerceris surveys.

Firewood follow up: In 2011 a 1.75 cubic foot box of Persimmon firewood was mailed from Colorado to NH as part of an alleged mail fraud. The wood was placed in our rearing barrels and 128 Hickory borers (fortunately native to the northeast) emerged between 2011 and 2012. This is an excellent reminder of the risk associated with moving firewood. Please remember untreated out of state firewood is banned in NH—Buy and Burn Local!

Please don't hesitate to contact us if you observe any forest pest damage. If you find unusual insects please capture them in a hard container, place them in a freezer, and contact us for identification. Photos can be uploaded on the UNH Extension website.

Forest Health Section Contacts

Program Coordinator
Kyle Lombard
603-464-3016
kyle.lombard@dred.state.nh.us

Forest Health Specialist
Jen Weimer
603-464-3016
jweimer@dred.state.nh.us

For more information about our program and forest health issues check out our website
http://nhdfl.org/forest-health/

Follow NH Forest Health on Twitter @NHDFL

Like New Hampshire Forest Health on Facebook

JW 12/12